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INFORMATION FROM
FOREIGN DOCUMENTS OR RADIO BROADCASTS

REPORT

CD NO.

COUNTRY	USSR
SUBJECT	Economic; Technological - Machine tools, diamond substitutes
HOW PUBLISHED	Daily newspaper and monthly periodical
WHERE PUBLISHED	Leningrad, Moscow
DATE PUBLISHED	Sep 1953
LANGUAGE	Russian

DATE OF INFORMATION 1953

DATE DIST. 5 APR 1954

NO. OF PAGES 2

SUPPLEMENT TO REPORT NO.

THIS IS UNEVALUATED INFORMATION

SOURCE As indicated

NEW TECHNIQUES RELIEVE DEMAND FOR INDUSTRIAL DIAMONDS IN USSR

FIND NEW DIAMOND SUBSTITUTE -- Leningradskaya Pravda, 18 Sep. 53

A laboratory at the All-Union Scientific Research Institute of Abrasives and Grinding is unofficially called "the laboratory of unknown materials." Its job is to search for new, more effective combinations of materials for machining hard-alloy tools. This laboratory was made responsible for finding a diamond substitute. It already has spent 5 years in this work.

The result of many years of research is a packet of dark-colored powder. The micropowders are made of material V-1. The contents of the packet look like dust, but Viktor Grigor'yevich Kondakov, a research worker, assures us that they are grains, whose dimensions are calculated in microns.

The new material was first used at the Leningrad Plant imeni Molotov, where dies and drawplates were machined with the newly manufactured powder. Testing showed that this powder is considerably more effective and less expensive than boron carbide. The wire obtained was of unprecedented surface finish and accurate in specified size. The productivity of wire-drawing machines increased by 20-30 percent.

Meanwhile, experiments in the use of these powders were being carried on at the All-Union Scientific Research Institute of the Tool Industry. The results exceeded all expectations. The institute has recommended micropowders made of material V-1 for machining all type designations of cutting tools made of hard alloy. Application of this innovation at machine shops will increase productivity 10-15 percent.

The new micropowders are already being used in finishing jewels for watches. Large grains of material V-1 have been successfully used to replace diamonds in core drills.

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Although material V-1 has just been tested, materials V-2 and V-3 already have been developed.

The All-Union Scientific Research Institute of Abrasives and Grinding has 16 laboratories; the 17th is a "big laboratory" which is the experimental plant.

ALUMINUM INSTEAD OF ABRASIVE REGULATING WHEELS FOR CENTERLESS GRINDING -- Moscow, Stanki i Instrument, Sep 53

Until quite recently, it was considered that both the grinding and regulating wheels in centerless grinding machines had to be dressed with diamonds to obtain a high-quality dressing. Now, however, grinding wheels are successfully dressed with diamond substitutes.

In the search for less expensive materials and for ways of conserving scarce diamonds, a plant in the USSR has introduced into production an aluminum regulating wheel in place of the abrasive wheel previously used.

The experience of working with aluminum regulating wheels has shown that the productivity of grinding and the surface quality remain the same and, in certain cases, surpass those obtained in diamond dressing.

The consumption of aluminum wheels is considerably lower than that of abrasive wheels. Dressing, with the use of a coolant is done at the same speed as if grinding by a tool (instead of a diamond inserted in a holder). The longitudinal feed must not exceed 0.2 millimeter. Automatic feed is recommended if it is available. The tool for dressing the wheel must be sharp at all times.

The dimensions of the aluminum wheel correspond to the dimensions of an abrasive wheel.

The new wheel has been used in machining piston pins for the S-80 tractor. Rigid technical conditions, as specified in the blueprint for finish, out-of-roundness, taper, and cutting (granenost') within 5 microns has been maintained.

The conversion to work with aluminum regulating wheels has made it possible to eliminate the use of a diamond.

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